

Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

1-43. (Cancelled)

44. (Elected) A lighted handle, comprising:

an elongate light transmitting member having first and second end portions flanking a hand graspable portion;

spaced, first and second, support surface engageable, mounting members carrying said first and second end portions of said light transmitting member, said mounting members having respective open portions in which said first and second end portions are fixedly recessed; and

a narrow beam light emitting diode fixedly located within said first mounting member and aimed longitudinally of said light transmitting member to make said light transmitting member more visible.

45. (Previously presented) The apparatus of Claim 44 in which said light transmitting member first end portion has a length axis, said light emitting diode having an emitted light beam axis parallel to, but spaced from said light transmitting member first end portion axis.

46. (Elected) The apparatus of Claim 44 in which first mounting member open portion is a recess which comprises (1) a relatively larger diameter outboard portion receiving said light transmitting member first end portion and (2) a relatively smaller diameter inboard portion receiving said light emitting diode.

47. (Previously presented) The apparatus of Claim 46 in which said recess outboard and inboard portions have longitudinal axes which are parallel but radially spaced.

48. (Elected) The apparatus of Claim 44 in which said first mounting member comprises a bracket having a foot including a mounting surface, a leg curving from said foot and having a free end portion spaced from said foot and mounting surface, said open portion of said first mounting member defining a recess, said leg free end portion being hollow and indented by said recess, said light transmitting member being formed as a bar, said bar and bracket having adjacent outer peripheral surfaces which are mutually flush, such that said bar continues the peripheral contour of said bracket in a visually unbroken manner.

49. (Elected) The apparatus of Claim 44 in which said light transmitting member first end portion has a free end, said light emitting diode being located adjacent to said free end of said elongate light transmitting member and having a self-focused light beam aimed into said free end of said light transmitting member, said light emitting diode having relatively low voltage and electric current supply connectable, electric conductors.

50. (Previously presented) The apparatus of Claim 49 including a low voltage electric current supply stepped down in voltage from a conventional household electric current supply and connected in circuit with said conductors.

51. (Previously presented) The apparatus of Claim 49 including a relatively low voltage and relatively low current supply comprising an electric storage cell and connected in circuit with said conductors, said first mounting member comprising support structure fixing said elongate light transmitting member and light emitting diode and electric storage cell adjacent to each other, said support structure including a releasable cell holding member replaceably locating said cell with respect to said support structure.

52. (Previously presented) The apparatus of Claim 51 in which said first mounting member comprises a hollow bracket supporting said first end portion of said elongate light transmitting member.

53. (Previously presented) The apparatus of Claim 51 in which said first mounting member comprises a wall to which said one end portion of said elongate light transmitting member is fixed.

54. (Cancelled)

55. (Previously presented) The apparatus of Claim 44 including a person-engageable bathroom fixture selected from the group consisting of a toilet, a bidet, a spa, a shower stall, and a bathtub, said handle being fixed on or adjacent said fixture.

56. (Previously presented) The apparatus of Claim 44 in which said elongate light transmitting member has a peripheral surface firmly and fixedly graspable when dry and when wet.

57. (Previously presented) The apparatus of Claim 56 in which said elongate light transmitting member is an extrusion and said firmly graspable peripheral surface thereof comprises integrally extruded, circumferentially alternating, axially extending ribs and grooves.

58. (Previously presented) The apparatus of Claim 44 in which said mounting members include walls and said respective open portions include holes through which said end portions of said light transmitting member extend, a first said wall having a portal closure openable to access an area behind said wall, and including an electric current supply unit supported in said area.

59. (Previously presented) The apparatus of Claim 44 including a current supply unit comprising a replaceable battery pack releasably supported by said first mounting member, said light emitting diode being of a type:

(a) which is self-focused in a relatively narrow light beam wherein the light output on its central axis is reduced to half at an angle more than 45° off that axis, such that substantially all of its light output is applied to the opposed end of said light transmitting member,

(b) having its rated light output at an electric current level substantially less than 100 milliamps,

(c) having at least dim light output at electric current levels as low as about 100 microamps,

(d) having an internal resistance which rapidly, nonlinearly increases as the voltage applied across it decreases,

(e) having an internal resistance which increases as current flow through it decreases, so as to maximize the time period between battery pack replacements while still producing useful levels of light.

60. (Elected) A lighted handle, comprising:

an elongate light transmitting bar having first and second end portions;

spaced, first and second, support surface engageable, mounting brackets carrying said first and second end portions of said light transmitting bar, said first bracket having a recess in which said bar first end portion is fixedly recessed; and

a narrow beam light emitting diode located in said first mounting bracket and aimed longitudinally of said light transmitting member to make said light transmitting member more visible.

61. (Elected) The apparatus of Claim 60 wherein said light transmitting bar has one portion of a first relatively larger thickness, and its said first end portion is of a second relatively smaller thickness extending from said one portion and having a substantially planar end face, said first end portion being telescoped in said recess, said light emitting diode being disposed in said recess adjacent the inboard end of said bar and aimed at said bar inboard end.

62. (Elected) The apparatus of Claim 60 in which said recess comprises (1) a relatively larger diameter outboard portion receiving said bar first end portion and (2) a relatively smaller diameter inboard portion receiving said light emitting diode.

63. (Elected) The apparatus of Claim 60 in which said recess and bar first end portion have engageable peripheral walls, at least one of which tapers, the central axes of said recess and bar end portion being in one of a range of relative angular positions.

64. (Previously presented) The apparatus of Claim 60 in which said bar comprises a plastic extrusion, said bar having an intermediate portion of substantially constant cross section between said first and second end portions, at least one said end portion having a machined outer periphery and said bar intermediate portion has an outer peripheral surface with a user grip enhancing contour.

65. (Previously presented) The apparatus of Claim 64 in which said contour has axially parallel, circumferentially spaced contour elements selected from the group consisting of grooves and ribs.

66. (Elected) The apparatus of Claim 60 in which said bar first end portion has an annular groove, and an annular

seal ring bearing on an interior peripheral surface of said recess, said bar first end portion being frictionally, removably, fixed in said recess.

67. (Cancelled)

68. (Previously presented) The apparatus of Claim 60 wherein said first mounting bracket is hollow, said light transmitting bar having its said first end portion telescoped in said recess in said first mounting bracket, said light emitting diode being fixed in said hollow bracket and aimed at the adjacent end of said light transmitting bar, an electric storage cell replaceably located in said hollow first bracket and connected in circuit with said light emitting diode.

69. (Previously presented) The apparatus of Claim 68 in which said first bracket has a cell entry/exit portal to facilitate cell replacement.

70. (Previously presented) The apparatus of Claim 68 in which an ambient light responsive, cell conserving switch is carried by said first bracket and connected in circuit with said light emitting diode and cell.

71. (Previously presented) The apparatus of Claim 68 in which said hollow first bracket is sized to carry a battery pack at least as large as two commercially available AAA cells.

72-73. (Cancelled)

74. (Previously presented) The apparatus of Claim 60 including a low voltage electric current supply unit, of voltage lower than conventional AC household electric current and connected in circuit with said light emitting diode,

said first mounting bracket compactly pocketing said first end portion of said light transmitting bar, said light emitting diode, and said low voltage current supply unit.

75. (Previously presented) The apparatus of Claim 74 in which said low voltage electric current supply unit comprises an electric storage cell connected in circuit with said light emitting diode, said mounting bracket including a releasable cell holding member replaceably locating said cell.

76. (Previously presented) The apparatus of Claim 74 in which said low voltage electric current supply unit comprises (1) a 110 volt AC converter circuit having a direct current output path through said light emitting diode, and (2) insulated conductors extending from said handle to a remote 110 volt AC connector device.

77. (Previously presented) The apparatus of Claim 74 in which said first mounting bracket has an interior through passage, one end of said passage being fixed with respect to said first end portion of said bar, said light emitting diode and at least a portion of said electric current supply unit being disposed in said passage.

78. (Previously presented) The apparatus of Claim 77 in which said electric current supply unit comprises an electric storage cell replaceably housed in said passage.

79. (Previously presented) The apparatus of Claim 77 in which said current supply unit comprises an AC-to-DC converter in said passage and insulated AC conductors running from said passage and out of the other end of said through passage.

80. (Previously presented) The apparatus of Claim 44 in which said elongate light transmitting member's first end portion has a free end face which is diametrically planar,

said light emitting diode having a light emitting end fixed immediately adjacent said diametrically planar bar free end face such that any clearance therebetween is a minor fraction of the diameter of said light emitting diode.

81. (Previously presented) The apparatus of Claim 44 in which said elongate light transmitting member first end portion having a free end which has an axially opening blind-ended hole substantially of the diameter and length of said light emitting diode and snugly housing therein said light emitting diode, said light emitting diode being aimed substantially toward the blind end of said hole.

82. (Previously presented) The apparatus of Claim 60 in which said recess comprises (1) a relatively larger diameter outboard portion receiving said bar first end portion and (2) a relatively smaller diameter inboard portion receiving said light emitting diode, said recess outboard and inboard portions having longitudinal axes which are parallel but radially spaced.

83. (New) A lighted handle, comprising:
an elongate light transmitting bar having first and second end portions flanking a hand graspable intermediate portion;
spaced, first and second, support surface engagable, mounting brackets carrying said first and second end portions of said light transmitting bar, said first bracket having:
(1) a surface mountable foot,
(2) a hollow leg extending from said foot toward said bar,
(3) a recess opening from the free end of said leg and snugly receiving said bar first end portion,
(4) an outward facing coaxial annular step extending radially in from the axially inner end of said recess,

(5) an elongate passage extending at reduced diameter from the radially inner edge of said annular step axially inward further into said leg of said mounting bracket, said passage having an intermediate bend and a remote end opening through said surface mountable foot of said mounting bracket,

said bar first end portion having:

(1) an annular, radially inward extending step abutting the free end of said leg,

(2) a reduced diameter neck extending from said annular step snugly into said recess in said mounting bracket leg

(3) a diametrically extending flat end on said neck axially opposing said outward facing annular step and passage in said leg;

an illumination unit having an inboard portion snugly seated in said passage substantially coaxially with an adjacent said outward facing annular step and having an outboard portion facing substantially coaxially into said recess, said illumination unit including a narrow beam light emitting diode having:

(1) a terminal end substantially coaxially fixed on said illumination unit inboard portion,

(2) a light beam emitting end opposing said flat end of said light transmitting bar reduced diameter neck, and

(3) and intermediate portion extending lengthwise substantially coaxially with said leg recess and said light transmitting bar reduced diameter neck.

84. (New) The apparatus of Claim 83 in which said recess is tapered at not greater than about 4 degrees to accommodate manufacturing variations in angle between the end and intermediate portions of said light transmitting bar.

85. (New) The apparatus of Claim 83 in which illuminating unit inboard portion bottoms against said bend.

86. (New) The apparatus of Claim 83 in which said light emitting diode is spaced from said bar across a length portion of said recess and has a beam half angle in the range of about 15 to 45 degrees.

87. (New) The apparatus of Claim 83 in which said annular steps are substantially coaxially spaced and said light beam emitting end of said light emitting diode is located axially between said annular steps.

88. (New) The apparatus of Claim 83 in which said annular step of said light transmitting bar transitions through a rounded annular fillet into the peripheral surface of said reduced diameter neck, the free end of said leg transitioning with an annular round into the inner peripheral surface of said recess of said mounting bracket leg.

89. (New) The apparatus of Claim 83 in which said second mounting bracket is similar to said first mounting bracket and said bar second end portion is similar to said bar first end portion but wherein said illumination unit is replaced by a light deflecting unit having a concave reflector opposing the free end of said bar second end portion, said light deflecting unit further including a spacer portion snugly received in the passage of said second bracket and having a free annular edge bottomed against a bend in the inner periphery of the mid-portion of the passage of said second bracket, such that such reflector receives light from said light emitting diode in said first bracket member and transmitted axially through said light transmitting bar and reflects same back through said light transmitting bar toward said light emitting diode.

90. (New) The apparatus of Claim 44 in which said light emitting diode is of a type which is self focused in a relatively narrow light beam, wherein the light output on its

central axis is reduced to half at an angle in the range of 15 to 45 degrees off that axis and substantially all of the light output of said light emitting diode is applied to the opposed end of said light transmitting bar.

91. (New) The apparatus of Claim 60 in which said bar comprises a plastic extrusion, said bar having an intermediate portion of substantially constant cross section between said first and second end portions, at least one said end portion having a machined outer periphery.